



Audiology Online, March 7th 2017

Ponto 3 SuperPower
new treatment option to BAHS patients

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Clinical Research and Training, BAHS
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Learner objectives

After completing this course, the participant will be able to:

- Explain why over-amplification is not a concern with a SuperPower BAHS device
- Describe who can benefit from a SuperPower sound processor
- Explain in which directional mode the speech intelligibility is improved with FreeFocus
- Describe how SuperPower is fitted and what reactions to expect from patients
- Describe what FLogram is and what it can be used for

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Agenda

- Introduction
- Challenges in BAHS and who can benefit from SuperPower
- Sound Quality
- Fitting with Genie Medical 2016.1
- Initial reactions from patients fitted with SuperPower
- DSL-BC fitting rational and FLogram
- Q&A

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Ponto 3 – The world's most powerful family of abutment-level processors



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Ponto 3 – The Definition of Power

Power your brain

Powerful sound quality



Power to participate

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Delivering success factors for patient outcome




Power your Brain

- Introducing BrainHearing™ for BAHS

Powerful sound quality

- Highest output ever from an abutment level sound processor
 - Widest frequency bandwidth
- 15% better speech understanding in 70% of time

Power to participate

- Wireless power
- Reliable performance

Empowering children

- First ever DSL-BC
- New Ponto Softband

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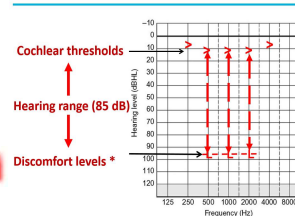
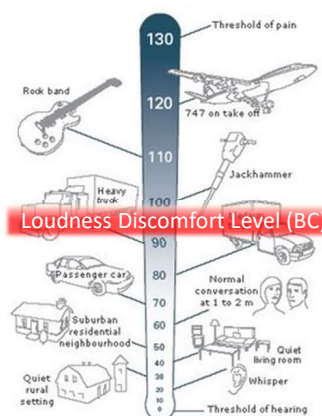
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Challenges in BAHS



*Dillon and Storey, 1998

Radoudine

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Challenges in BAHS

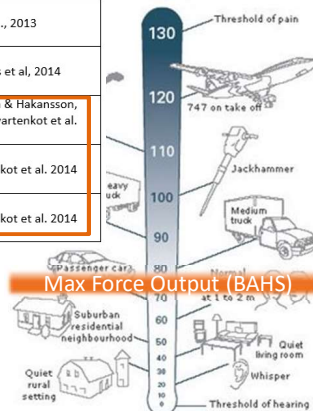
Objective measurement of the MPO of several hearing devices

Device	Measured MPO	Reference
Sophono Alpha 1	56 dB HL	Hol et al., 2013
Bonebridge	65 dB HL	Mertens et al., 2014
Standard Baha Divino / BP100	67-69 dB HL	Carlsson & Hakansson, 1997 Zwartenkot et al. 2014
Ponto Pro	67-69 dB HL	Zwartenkot et al. 2014
Baha Cordelle	80 dB HL	Zwartenkot et al. 2014

[http:// www.snimplants.nl](http://www.snimplants.nl)



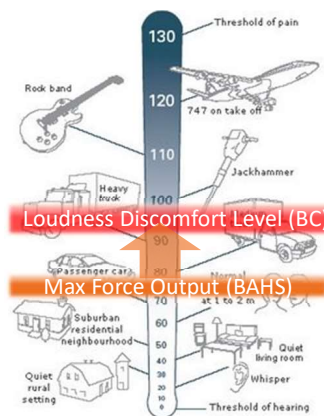
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Challenges in BAHS

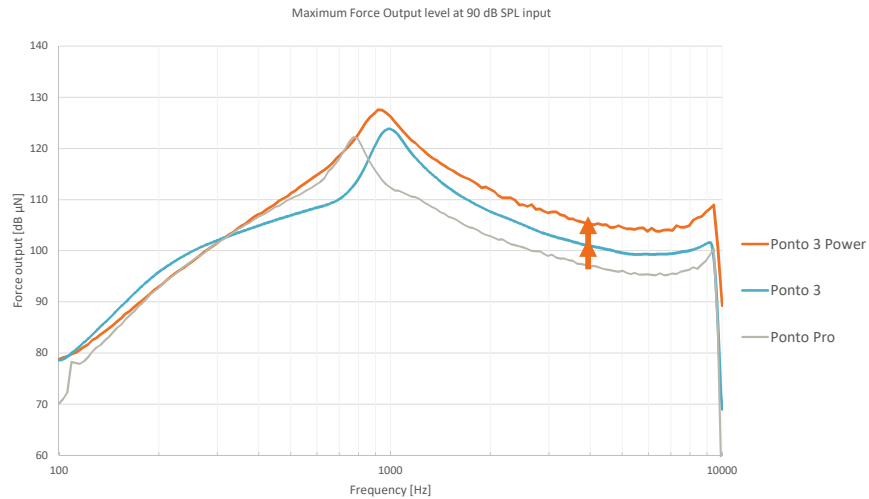
MFO is lower than LDL



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Committed to deliver higher max. output Ponto 3 & Ponto 3 Power

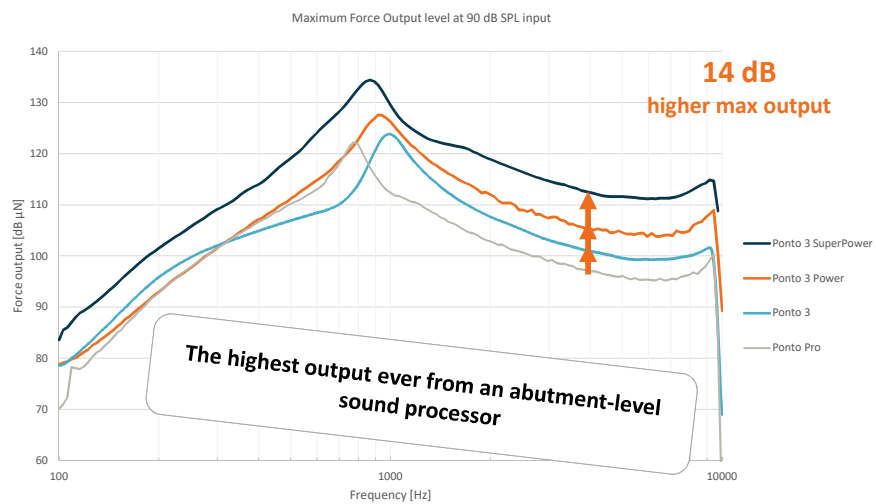


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Ponto 3 SuperPower

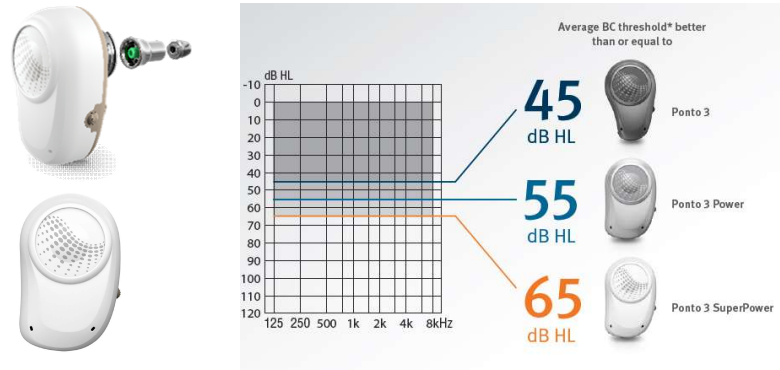


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Ponto 3 family fitting range

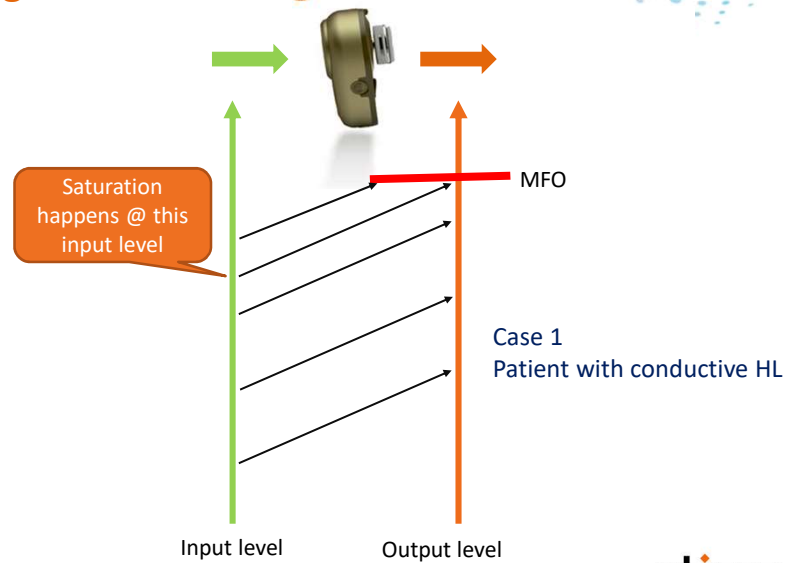


- Large overlap, when to use the SuperPower device?

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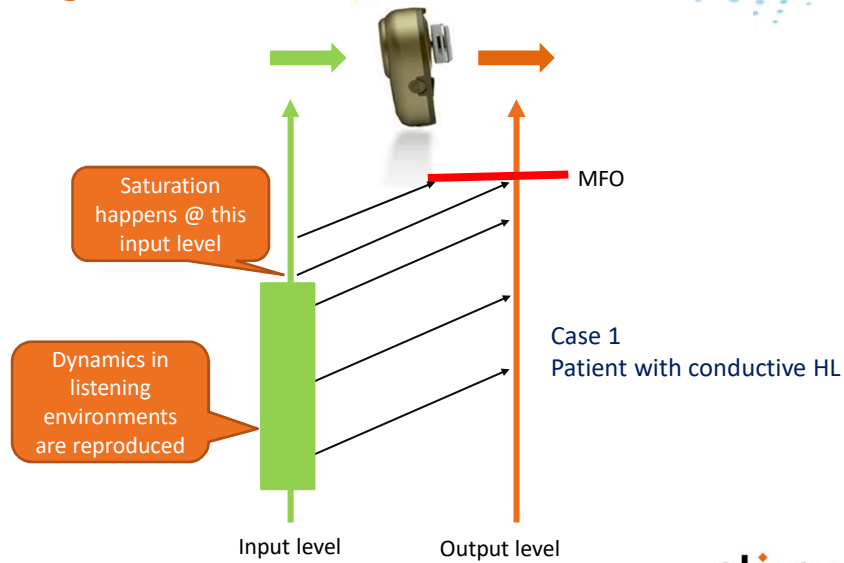
Using a BAHS with higher MFO



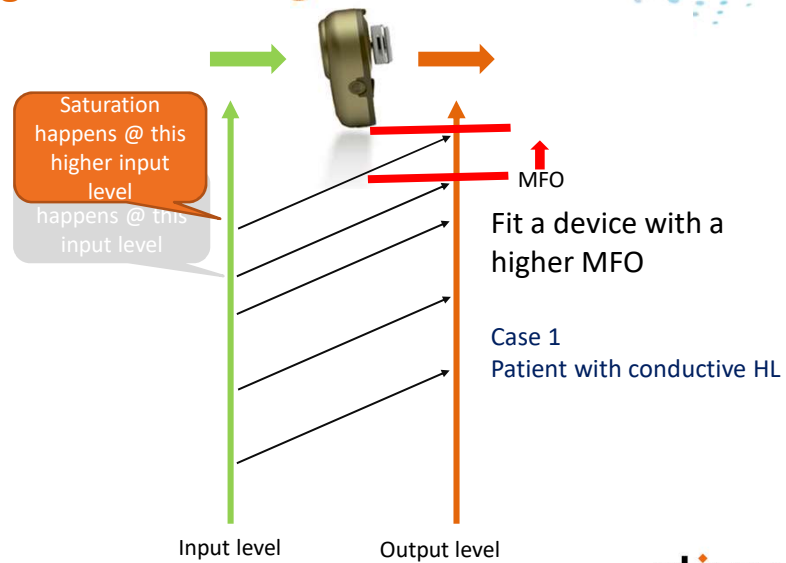
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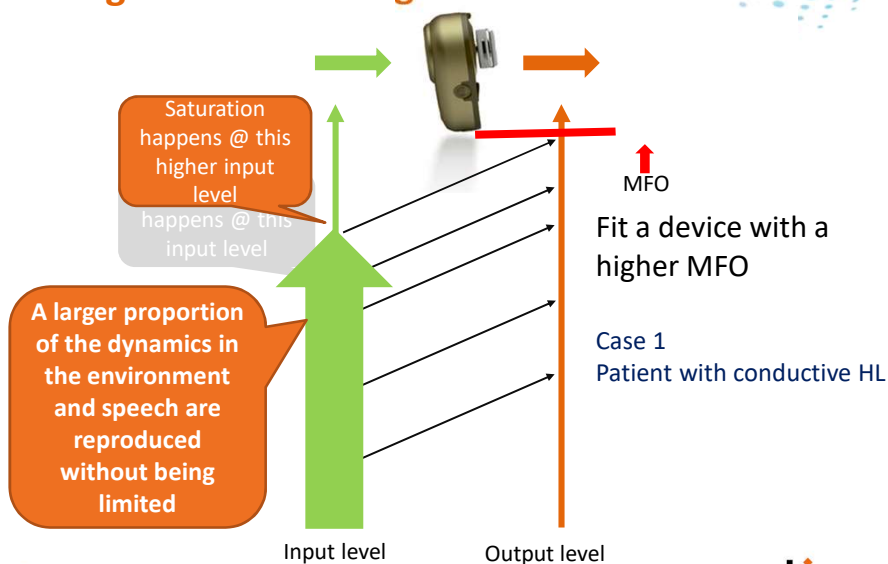
Using a BAHS with higher MFO



Using a BAHS with higher MFO



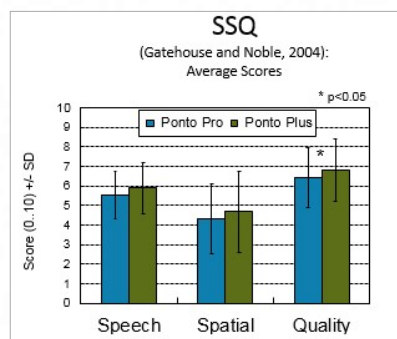
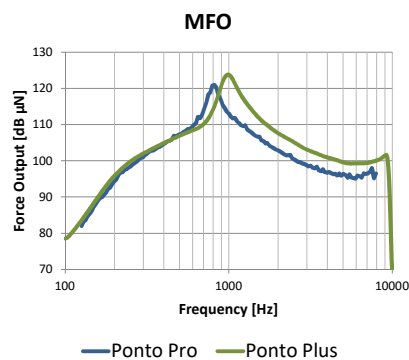
Using a BAHS with higher MFO



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What is the effect of higher max output?

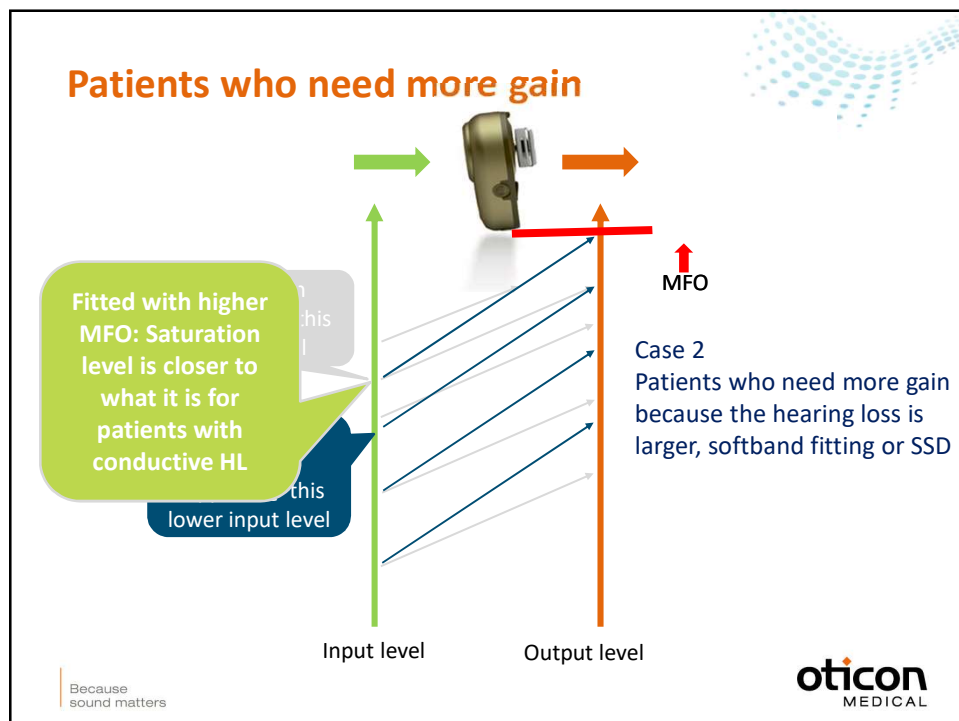
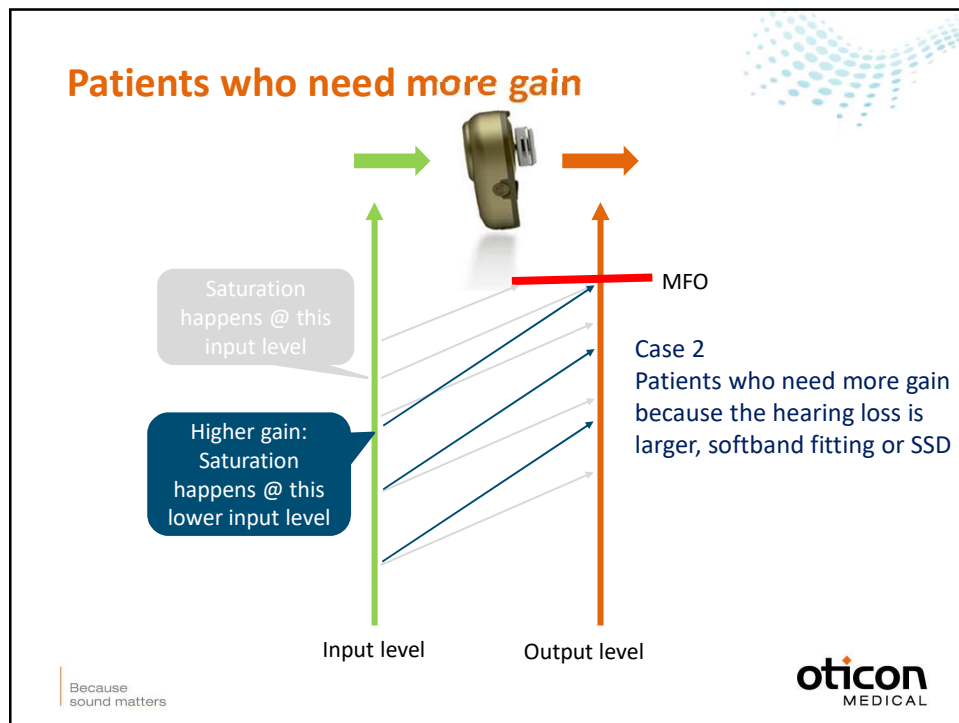


Sign. better sound quality with Ponto Plus over Ponto Pro¹

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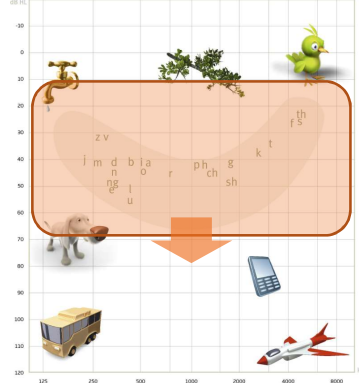
1) Bosman et al (2014) Evaluating Oticon Medical Ponto Plus and Ponto Pro sound processor. Aud. Online Article 12616

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Using Ponto 3 SuperPower: Increases the dynamic range

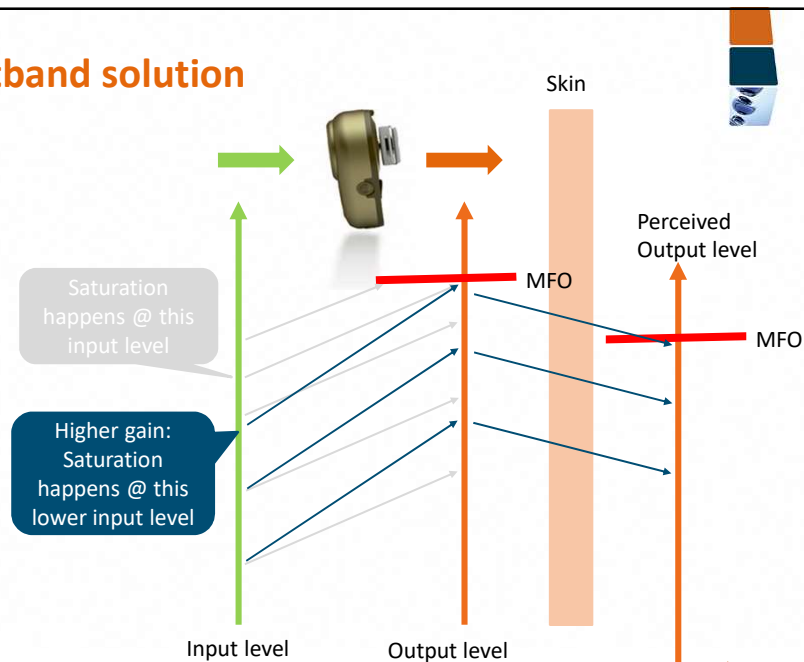
Schematic, Auditory Dynamic Range



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Softband solution



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All candidates benefit from Ponto 3 SuperPower

- **Patients with conductive loss**
 - Higher MFO means better utilization of patients dynamic range
 - More natural sound in louder listening environments
- **Patients with mixed hearing losses**
 - Higher MFO gives larger dynamic range / headroom in the device, so more sounds are reproduced naturally without being limited
 - Higher gain needs excellent feedback management
- **Softband and head band users**
 - Higher MFO to address skin attenuation
- **SSD patients**
 - Better ability to loudness match sounds from the device to the normal hearing ear



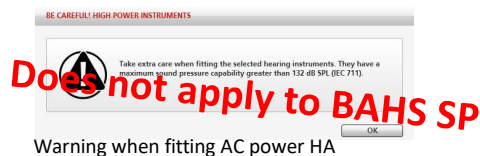
Ponto 3 SuperPower

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Using a SuperPower device, won't it be too loud/powerfull?

- BAHS's **MFO** is well below patients' LDL
- So no risk of "over-fitting" by using a BAHS Power device



- **Gain** is prescribed to HL and can be prescribed low enough
- Patient can max turn up volume 10 dB
- So no risk of "over-amplification"

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Let patients test the SuperPower device

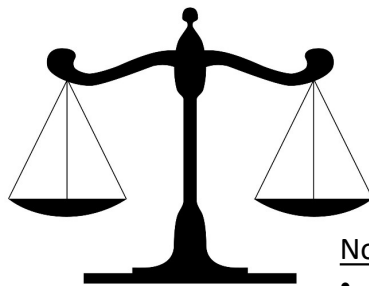
- Do patients ask for a Power device?
No, only when we let the patient test / listen to a power device will he/she know and feel what it can do for him/her
- Try the device in dynamic environments (e.g. hospital café, outdoor)



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Let patients test the SuperPower device in dynamic listening environments



Tangible

- Cosmetic
- Handling
- Wireless
- ...


Not tangible

- Sound quality
- Speech understanding
- Reliability
- ...

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Ponto 3
Sound quality



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The recipe for Ponto Sound Quality

**Output –
higher max
output**



**Bandwidth –
greater range of
high and low
tones**



**Clarity –
without
distortion**



These are all at core of our development and the fundamentals
for delivering Ponto Sound Quality.

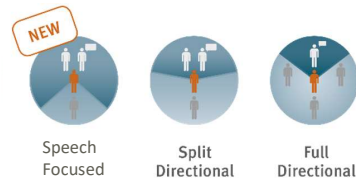
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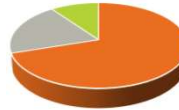
FreeFocus directionality system

- FreeFocus is characterised by:

- FreeFocus modes



- Automatic directionality system



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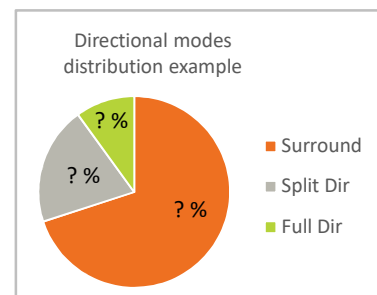
Automatic Directionality

Recap:

- Automatically changes between the modes:

- Surround
- Split Directional
- Full Directional

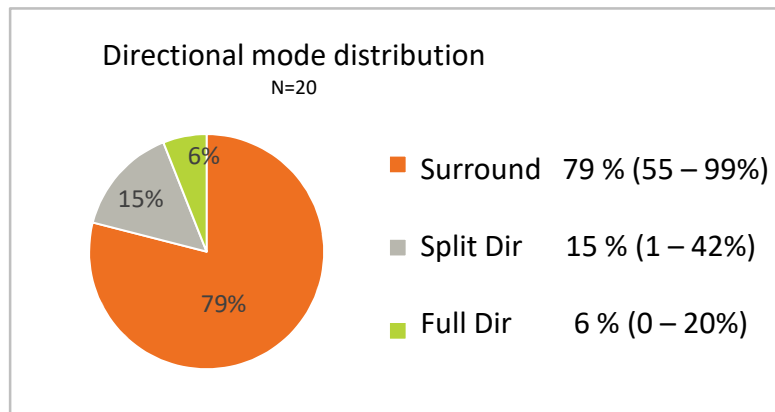
based on sound level and
what provides the best SNR.



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Automatic Directionality distribution

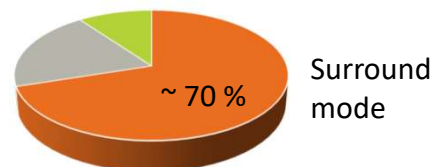


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70 % of the time in Surround

- Patients are in Surround mode most of the time, typically at least around 70 % of the time



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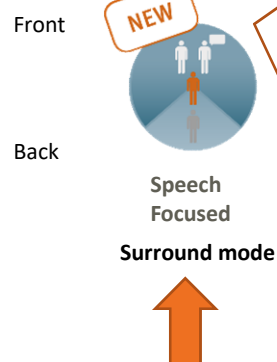
Example



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FreeFocus modes



Speech Focused is a light directional mode that has a high frequency cut-off between directional and omnidirectional at 1880 Hz.

This keeps the lower frequencies omnidirectional, **allowing environmental input from all directions**, and high frequencies in a more directional mode to enhance **focus on the source of interest** when positioned in front of the listener.

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Evidence

FreeFocus test

- **Objective:** Compare the subjective and objective outcome of the FreeFocus directionality system in Ponto 3 to the directionality system in Ponto Plus
- **Design:**
 - 19 adult patients (conductive (5), mixed (9) and SSD(5)), all using Ponto Plus prior to test
 - Test Ponto 3 with FreeFocus in daily listening situations
 - Outcome measures:
 - Speech in Noise test (Dantale II), loudspeaker set-up: $S_0N_{+/-110, 180}$ Speech Focused (Ponto 3) versus Surround (Ponto Plus)
 - SSQ questionnaire

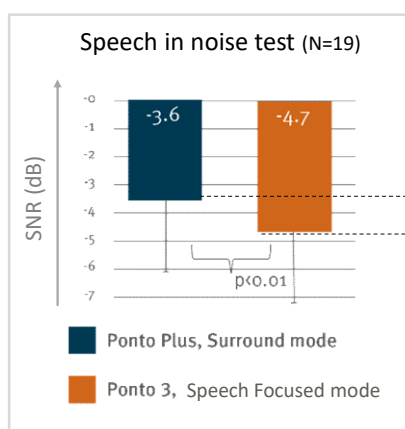
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*FreeFocus test report (2016), Oticon Medical report no 34425-00

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Evidence

Speech Focused mode



1.1 dB improved SNR with Ponto 3 over Ponto Plus.

1.1 dB ~ 15 % improved speech intelligibility

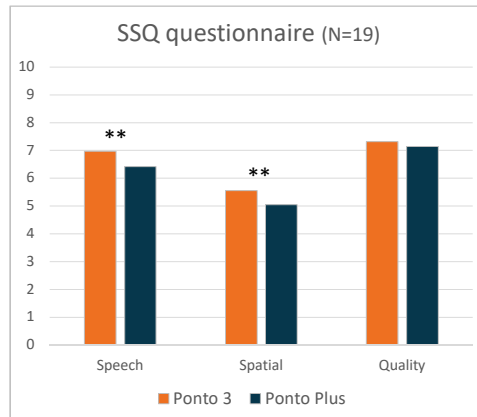
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*FreeFocus test report (2016), Oticon Medical report no 34425-00

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Evidence

Automatic Directionality with Speech Focused mode (FreeFocus)



Patients experienced **significant improved speech understanding** and **spatial perception** with Ponto 3 over Ponto Plus.

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*FreeFocus test report (2016), Oticon Medical report no 34425-00

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Patients' comments on Ponto 3 (FreeFocus)

"Generally better
speech
understanding"

"I hear better at work"
(as photographer)

"Hear more clearly what
the other passengers in
the buss is talking about"

"Other people tell me that
I hear better, I also feel it
myself"

"Better speech
understanding"

Clearer speech
understanding

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Ponto 3 – Powerful sound quality



FreeFocus optimised directionality

NEW



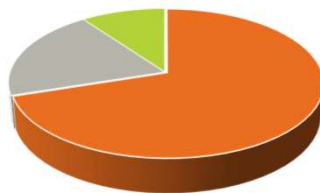
Speech Focused



Split Directional



Full Directional



A typical user spends 70% of time in Surround mode
- Brain hearing leads us to focus on improving the situations that matter the most

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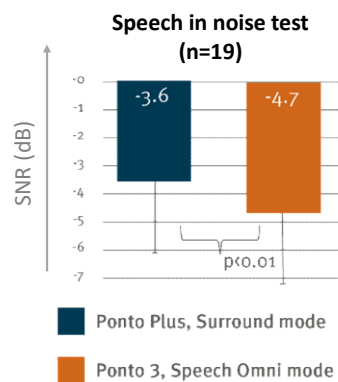
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Ponto 3 – Powerful sound quality



15 % better speech understanding in 70% of time

- The unique Speech Focused mode provides 15 % better speech understanding in the majority of situations.



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*FreeFocus test report (2016), Oticon Medical report no 34425-00

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Recommended Fitting flow for all Ponto devices

The fitting flow is:

1. Detect sound processor
2. Select type of fitting:
 - Single-sided deafness
 - Softband
3. Measure Feedback limit
4. Measure BC In-situ



The order is changed:
run the Feedback Manager
before BC In-situ.

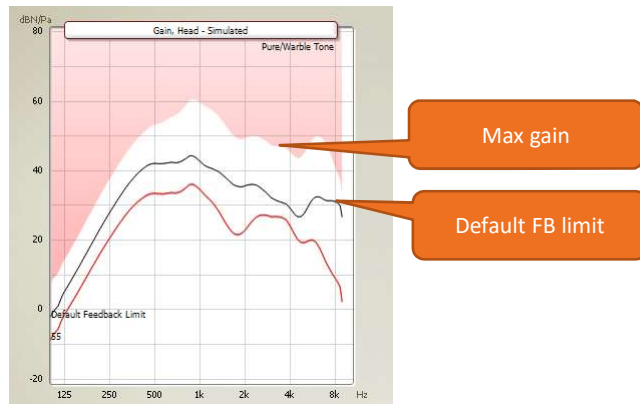
Hand-out Oticon Medical Streamer
(one don't need to do anything in Genie Medical)



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Default feedback limit in Ponto 3 SuperPower (P3SP)



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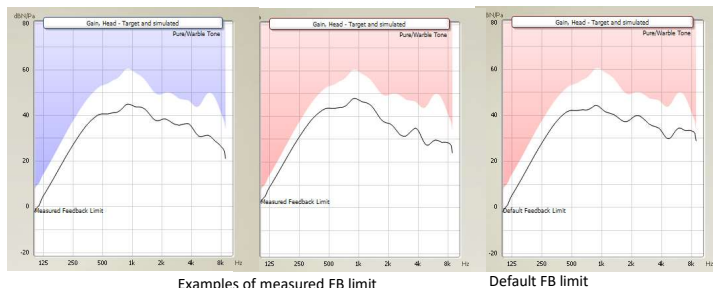
The measured feedback limit,
where can we expect it to be?

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Measured feedback limit on abutment

- Measured FB limit will most often be at or just above the default limit



- If measured FB limit is below default limit then consider changing to a longer abutment

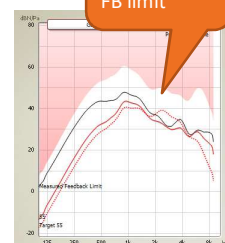


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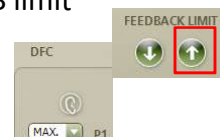
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Measured feedback limit on abutment

- For big-HL it is typically the FB limit that determines the amount of gain that can be utilized, not the max. gain limit.



- (optional) Manually turn up the measured FB limit
- Make sure DFC is in 'Max'

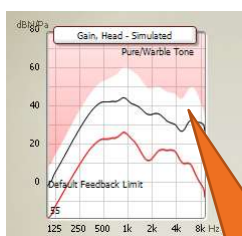


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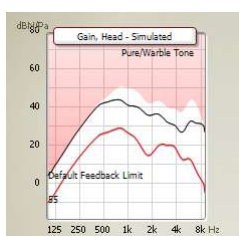
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Measured FB limit across Ponto devices

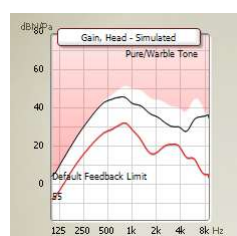
- Default and measured FB limits are roughly the same across Ponto devices



Ponto 3 SuperPower



Ponto 3 Power



Ponto Plus Power

It might look as if FB limit is lower in P3SP compared to other products, it isn't

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Is the FB limit ever up at max. gain level?

- FB limit can be all the way up to max gain in a softband fitting:



Measured FB limit
is almost at max.
gain level

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Patients' reactions and counselling



Patients' reactions to the sound in P3SP

- Patients with large mixed HL:
 - "it sounds more calm, pleasant"
 - "P3SP sounds softer"
 -
- SSD:
 - "There is not so much difference to the sound coming into my normal hearing ear"
 -



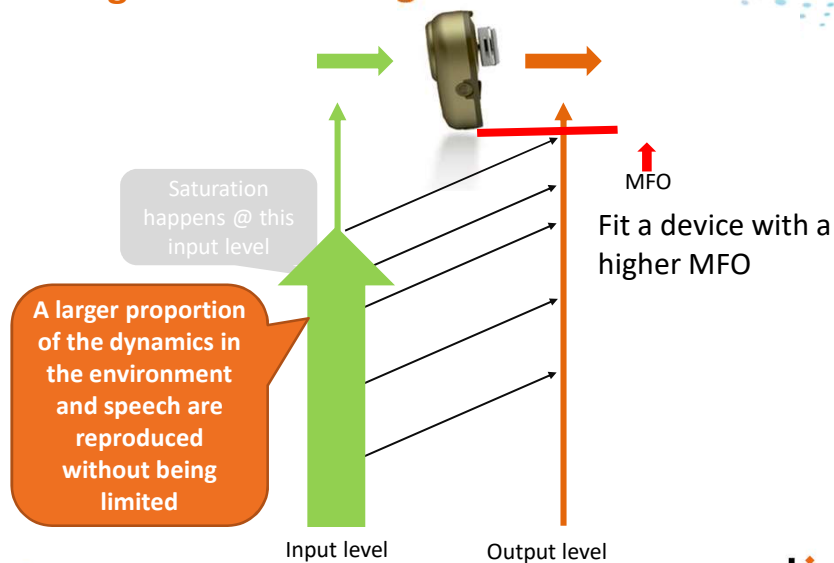
Patient's reactions are related to their previous experience.

Therefore bear in mind
what the patient
is used to prior to testing P3SP?

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Using a BAHS with higher MFO



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Experiences coming from another abutment level device with lower MFO

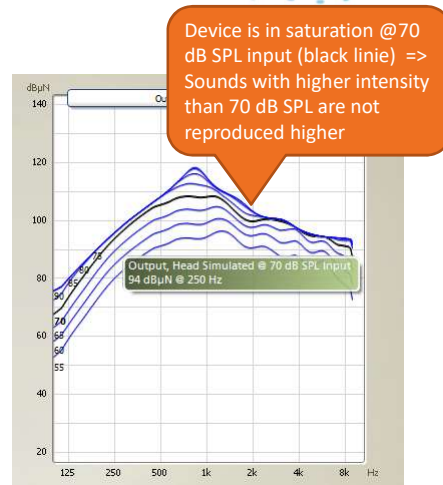
Example: MFO as in Ponto 3



- Device is in saturation
- ↓
- Distortion
- ↓
- Sounds loud

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Experiences coming from another abutment level device with lower MFO

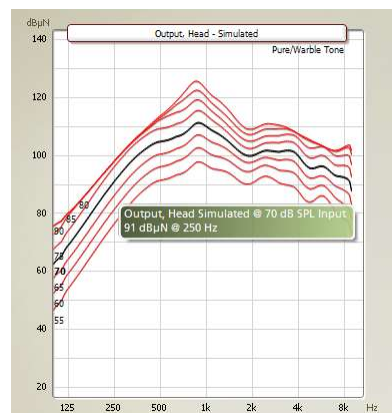
Example: to P3SP



- Less often in saturation
- ↓
- Less distortion
- ↓
- Sounds quieter, more calm

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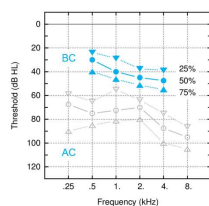
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Preliminary results; P3SP test Nijmegen

Nijmegen study – Ponto 3 SP

- subjects
 - BAHs experiences: 5-year replacements
 - Ponto Pro Power (N=19), Baha Intenso (N=1)
 - unilateral (N=14), bilateral (N=6)
- inclusion criteria
 - compos mentis
 - age < 80 years (22-80 yrs; avg: 63.0 yrs)
 - substantial air-bone gap
 - BC-thresholds > 30 dB HL
- follow-up (N=17)
 - tests too complex/tiring (N=1), brain infarct (N=1)
 - appointment postp

Pure-tone audiometry (N=20)



Some comments ...

- Geluid is rustiger* calm, even sound
- 1. mijn gehoor is beter* less startled by sudden loud sounds
- 2. Ik schrik minder bij plotseling harde geluiden* gets compliments on his hearing
- 3. Ik krijg complimenten van mensen* more natural sound
- 1. Geluid is natuurlijker* understands better in noise
- 2. Versta beter in rumoerige omgeving* hears rear sounds better
- 3. hoor beter wat en achter mij geluid*
- a. Geen galmend geluid in auto.....bij vorige wel. no reverberance in car
- b. Geeft over het algemeen een rustigere hoorervaring. more calm, even sound
- c. Alles klinkt natuurlijker...dit in vergelijking met het blikkege geluid van vorige toestel more natural sound
- d. Opvallend de andere draairichting van het volume-wieltje.
- e. Bij volume verhogen geen galm.....
- f. Batterijen hebben opvallend korte levensduur.....???? ?

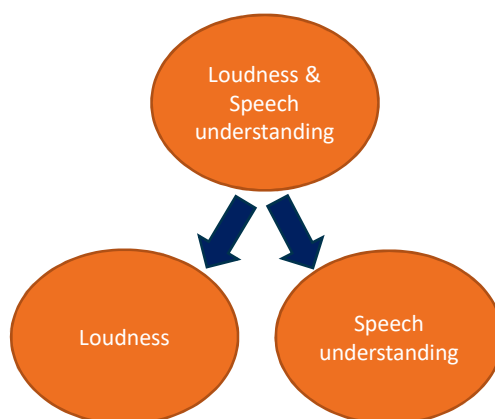
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Bosman et al. (2017) Ponto 3 SuperPower test – preliminary results. Radboud University, Nijmegen

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Patient counselling



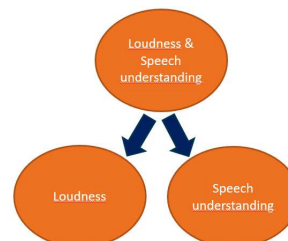
"sounds don't necessarily need to sound loud to be understood"
(they of course need to be audible)

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Patient counselling

- Let the patients experience that they can understand speech without the feeling of loudness:
 - Talk to them without lip reading
 - Ask them to focus on speech understanding and not on loudness
- One need to demonstrate it for them – ‘talk to their heart’ & let them feel – don’t only talk to them intellectually



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Agenda

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- Challenges in BAHS and who can benefit from SuperPower
- Sound Quality
- Fitting with Genie Medical 2016.1
- Initial reactions from patients fitted with SuperPower
- DSL-BC fitting rational and FLogram
- Q&A

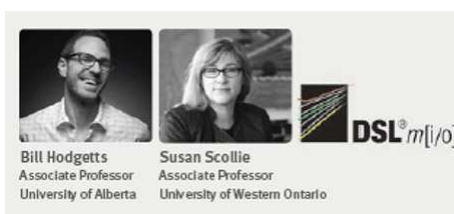
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First ever DSL-BC

The well-known **DSL** fitting rationale
is now **tailor-made for BAHS**,
called DSL-BC.

For the **first time ever**
implemented in BAHS !



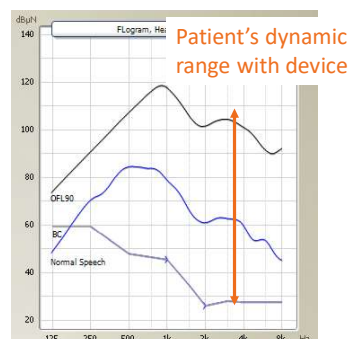
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DSL-BC for BAHS

- Build on DSL v5.0 m[i/o] concept:
Map the natural dynamic range to the patient's dynamic range
(residual auditory area).
- Input parameters to DSL-BC:
 - BC In-situ hearing threshold
 - *Sound processors' MFO*
 - *RHCD (Real Head to Coupler Differences)*
- And the amplification is prescribed

Product specific information already in Genie Medical

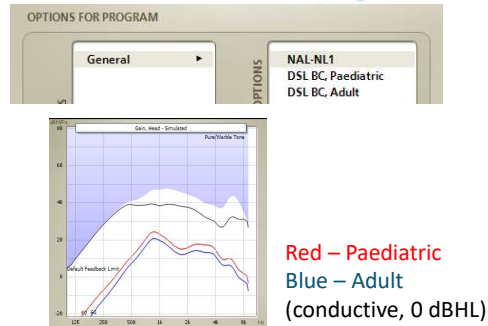


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DSL-BC for BAHS

- Adult and Child version



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DSL-BC for BAHS

- Compared to NAL-NL1,
DSL-BC provides:

- Less LF amplification
- Less amplification for conductive HL
- Some higher amplification (and CR) for larger mixed HL



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DSL-BC fitting rationale

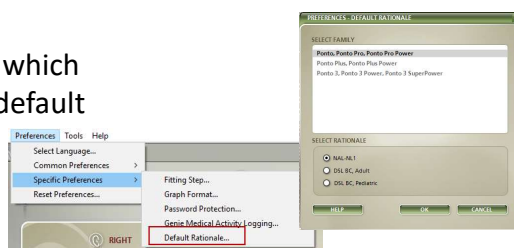
DSL-BC available in all Ponto devices:

- Ponto Pro
- Ponto Plus
- Ponto 3



- Preferences

Audiologists can choose which rationale should be the default



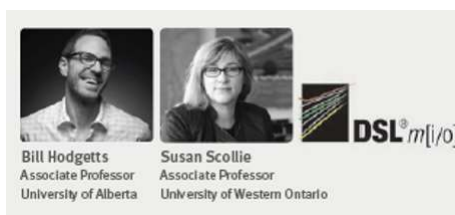
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First ever DSL-BC

The well-known **DSL** fitting rationale
is now **tailor-made for BAHS**,
called DSL-BC.

For the **first time ever**
implemented in BAHS !



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Genie Medical 2016.1 Release overview

Product introduction / features



SELECTION



FITTING



END FITTING

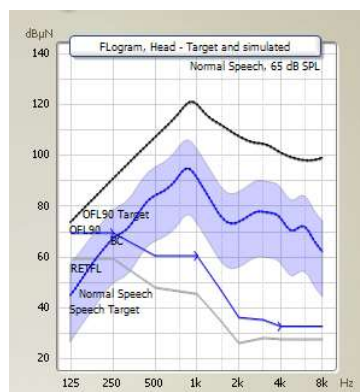
- Ponto 3 family
- DSL-BC fitting rationale
- Flogram
- FreeFocus
- Binaural Synchronisation
- Fitting Assistant
- Binaural Coordination
- Softband prescription is update
- Recommend fitting flow is updated

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Flogram

- Flogram is new way to look at a fitting / prescription.

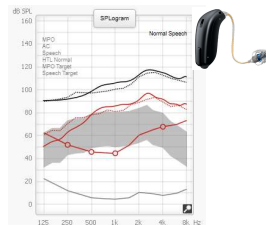


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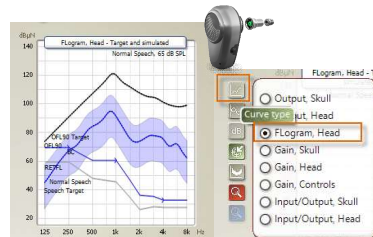
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FLogram in Genie Medical

- FLogram is for bone anchored devices what SPLogram is for AC hearing aids



Sound pressure level
(dB SPL) at ear drum



Force level (dBμN) at
abutment on head

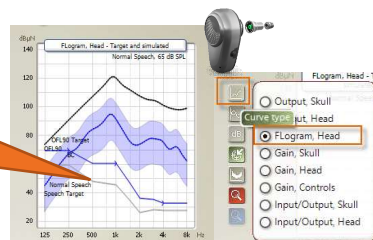
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FLogram

Normal hearing threshold level in FLogram

The grey line is the
normal hearing
reference, RETFL



Force level (dBμN) at
abutment on head

- RETFL = Reference Equivalent Threshold Force Level measured with direct sound transmission via abutment, normal hearing reference.¹

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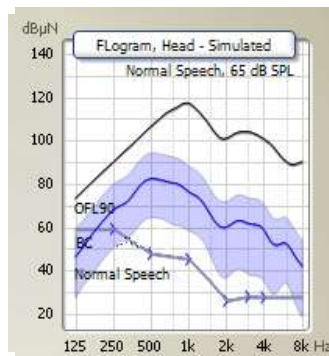
1) Carlsson et al (1995) Force threshold for hearing by direct bone conduction.
J Acoust. Soc. Am. **97** (2)

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FLogram in Genie Medical

- FLogram makes it **easy to judge audibility**, see and compare:

- The patients BC hearing threshold as measured with BC In-situ
- OFL90 of the device and
- Aided Normal Speech spectrum



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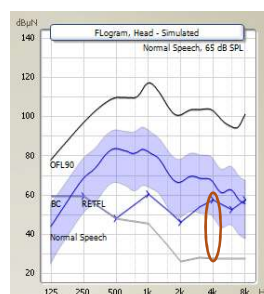
FLogram

The hearing loss can look unfamiliar

Example of how
this HL looks in
FLogram



30 dB HL (4kHz)



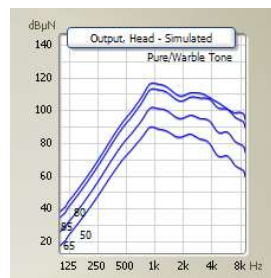
Hz	500	1k	2k	4k	6k
dB HL	0	15	20	30	25

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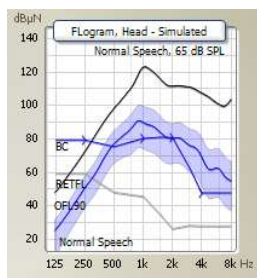
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FLogram

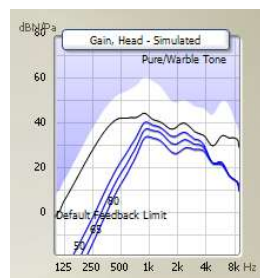
Supplement to curve types



Output
Saturation



FLogram
Audibility



Gain
FB limit
VC increase

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Summary – Ponto 3 SuperPower (P3SP)

- P3SP's MFO does not exceed the patient's LDL
- All patients can benefit from higher MFO as in P3SP, especially those who need additional gain due to HL in cochlea, SSD or softband fitting
- FreeFocus directionality system has a new Surround mode (Speech Focused) which increases speech intelligibility by 15 %
- Patients typically describe the sound in P3SP to more calm and natural
- DSL-BC is available in all Ponto devices
- FLogram view is useful for judging audibility

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Battery lifetime

- Ponto 3 Power: 70-150 hours
- Ponto 3 SuperPower: 35-80 hours

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Ponto 3 – SuperPower made beautiful

The world's first single-unit SuperPower

- Ponto 3 SuperPower combines a discreet-, small design and a battery that lasts.
- Abutment-level processor - no strings or need for any bulky ear- or body-worn devices



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Oticon Medical Streamer and app














Download on the
App Store

GET IT ON
Google play

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The most complete wireless system

	Cell phone	Included in Ponto Streamer 
	Tele Loop	
	Music	
	PC BT (Skype/Voip)	
	PC cable (Skype/Voip)	
	Remote	
	Television	Ponto Streamer & Connectline TV adapter
	Phone	Ponto Streamer & Connectline Phone adapter
	Microphone	Ponto Streamer & Connectline Microphone
	FM System	Ponto Streamer & FM receiver

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Bimodal use of Oticon Medical Streamer



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Which Oticon hearing aids can be used in a bimodal Oticon Medical Streamer setup?

- Currently, there are six models that can be used bimodally with OM Streamer*:

- **Dynamo:**

- Dynamo SP4
- Dynamo SP6
- Dynamo SP8
- Dynamo SP10



- **Sensei SP:**

- Sensei SP
- Sensei SP Pro



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* Find the full list of Oticon Medical Streamer-compatible hearing aids at www.oticonmedical.com/OMStreamerHA

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How do we recommend that Oticon Medical Streamer is used in bimodal fitting cases?

- Leave Oticon Medical Streamer **OPEN**.
 - The wireless Ponto Plus sound processors and the Oticon hearing aid can both be used with the Oticon Medical Streamer without linking, right out of the box, in the **OPEN** condition



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